

# Francis Fortin

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## Diploma & Academic curriculum

- 2016–2019 **PhD in Physics of the Universe**, *CEA Saclay and Université de Paris*, France.
- 2015–2016 **MSc in Astronomy and Astrophysics**, *Observatoire de Paris*, France.
- 2013–2015 **BSc in Fundamental Physics**, *Magistère de Physique Fondamentale d'Orsay*, France.
- 2011–2013 **Prep. class for Engineering School**, *Lycée Henri Bergson*, Angers, France.
- 2011 **Baccalauréat**, *Lycée Sainte Agnès*, Angers, France.

## Research projects

- Post-doc** **Bin2Grav: from X-ray binaries to gravitationnal waves**, *LabEx UnivearthS, laboratoire APC, Université de Paris*.  
2020–now  
Multi-disciplinary project on X-ray binaries: using of Gaia EDR3 to determine natal kicks on high-mass X-ray binaries, recreating black hole merger events seen by Virgo using binary evolution simulations, finding the birthplace of binaries with Gaia EDR3.
- Post-doc** **Progenitors of LISA compact binaries: the impact of Gaia in population synthesis models**, *ATER, Astroparticule et Cosmologie (APC), Université de Paris*, France.  
2019–2020  
Cataloging known X-ray binaries and correlation with Gaia data, simulation of binary evolution tracks with MESA, prediction of GW signals detectable with LISA.
- PhD Thesis** **Binary systems: formation, evolution and environment**, supervised by Sylvain Chaty at *Commissariat à l'énergie Atomique (CEA)*, Saclay, France.  
2016–2019  
Analysis of observational data from ESO VLT (ISAAC, X-Shooter, FORS2). Spectroscopic identification of new accreting binaries, characterization of the environnement of an obscured system and a microquasar, census of known X-ray binaries.
- Internships** **Revealing the nature of stars orbiting a compact object**, *CEA Saclay*, France.  
**Optical study of the variability of cataclysmic binaries**, *Leibniz-Institut für Astrophysik*, Potsdam, Germany.  
**Calibration of the Split Pole magnetic spectrometer**, *Institut de Physique Nucléaire*, Orsay, France.

## Teaching duties

- 2019–2020 **Physique expérimentale et Physique expérimentale Avancée (L3)**, *Université de Paris*, TPs, experimental projects using the Diderot Little Telescope facilities (126 h).
- 2017–2019 **Première Année Commune aux Études de Santé (L1)**, *Université Paris Diderot*, Physics tutorials for students of medicine (52 h).
- 2017–2018 **Classe Préparatoire aux Écoles d'Ingénieur (L1)**, *Université Paris Diderot*, Oral exams (19 h) and practical tutorials (9 h) in physics.

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## Skills

- Languages    Fluent English (C2), basics in German and Japanese.
- Softwares    Python, Iraf, ESO suite (EsoReflex, Gasgano, Molecfit), MESA, Topcat

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## Expertise and public outreach

- 2020    **The Book of Stars**, Scientific expertise for the French videogame company Ubisoft, writing of 31 cards detailing various aspects of astrophysical objects..
- 2016–2017    **Palais de la Découverte**, Paris, Outreach for the general public, 45' oral presentations about my PhD thesis subject (64 h).

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## List of publications

### • Rank A refereed publications in international journals (4)

- 2020    – **Fortin F.**, Chaty S., et Sander A. *Optical and infrared study of the obscured B[e] supergiant high-mass X-ray binary IGR J16318-4848*. The Astrophysical Journal 894 (8 mai 2020): 86. <https://doi.org/10.3847/1538-4357/ab881c>
- Chaty S., **Fortin F.**, et López-Oramas A. *Broad-band spectral energy distribution of the X-ray transient Swift J1745-26 from outburst to quiescence*. Astronomy and Astrophysics 637 (1 mai 2020): A2. <https://doi.org/10.1051/0004-6361/201935720>.
- 2019    – Nowak M. A., Paizis A., Jaisawal G. K., Chenevez J., Chaty S., **Fortin F.**, Rodriguez J., et Wilms J. *Chandra-HETGS Characterization of an Outflowing Wind in the Accreting Millisecond Pulsar IGR J17591-2342*. The Astrophysical Journal 874 (1 mars 2019): 69. <https://doi.org/10.3847/1538-4357/ab0a71>.
- 2018    – **Fortin F.**, Chaty S., Coleiro A., Tomsick J. A., et Nitschelm C. H. R.. *Spectroscopic identification of INTEGRAL high-energy sources with VLT/ISAAC*. Astronomy and Astrophysics 618 (1 octobre 2018): A150. <https://doi.org/10.1051/0004-6361/201731265>.

### • Rank B publications in international congress proceedings (3)

- **Fortin F.**, Chaty S., Goldoni P., et Goldwurm A. *IGR J16318-4848: optical and near-infrared spectroscopy of the most absorbed B[e] supergiant X-ray binary with VLT/X-Shooter*. 346 (1 décembre 2019): 152-57. <https://doi.org/10.1017/S1743921319001248>
- **Fortin F.**, Chaty S., Coleiro A., Tomsick J. A., et Nitschelm C. H. R. *Spectroscopic identification of INTEGRAL high-energy sources with VLT/ISAAC*. 346 (1 décembre 2019): 49-54. <https://doi.org/10.1017/S1743921318007743>
- Chaty S., **Fortin F.**, García F., et Fogantini F. *The dark side of supergiant High-Mass X-ray Binaries*. 346 (1 décembre 2019): 161-69. <https://doi.org/10.1017/S1743921319001273>

### • Astronomer's Telegram (1)

- **Fortin F.**, Chaty S., et Tomsick J. A.. *Confirmation of IGR J17445-2747 infrared counterpart*. The Astronomer's Telegram 0284 (1 avril 2017). <http://adsabs.harvard.edu/abs/2017ATel10284....1F>